

**Final
Site-Specific Safety and Health Plan
Former 37mm Antitank Range, Parcel 230Q-X, and
Former Rifle Range, Parcel 149Q
Fort McClellan
Calhoun County, Alabama**

**Prepared for:
U.S. Army Corps of Engineers, Mobile District
109 St. Joseph Street, Mobile,
Alabama 36602**

**Prepared by:

IT Corporation
312 Directors Drive
Knoxville, Tennessee 37923**

**Task Order CK10
Contract No. DACA21-96-D-0018
IT Project No. 796887**

April 2002

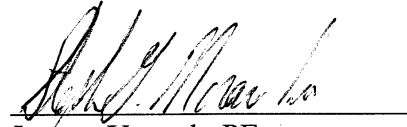
Revision 0

The following Site-Specific Safety and Health Plan (SSHP) has been designed for the methods presently contemplated by IT Corporation (IT) for execution of the proposed work. Therefore, the SSHP may not be appropriate if the work is not performed by or using the methods presently contemplated by IT. In addition, as the work is performed, conditions different from those anticipated may be encountered and the SSHP may have to be modified. Therefore, IT only makes representations or warranties as to the adequacy of the SSHP for currently anticipated activities and conditions.

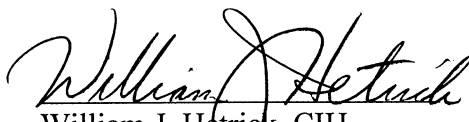
This Site-Specific Safety and Health Plan must be used in conjunction with the Installation-Wide Safety and Health Plan and Installation-Wide Ordnance and Explosives Management Plan, Fort McClellan, Alabama.

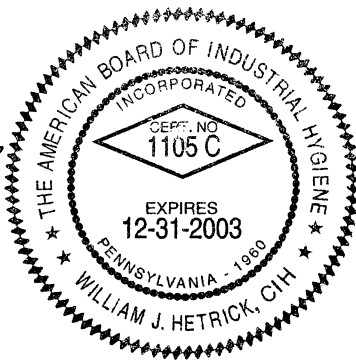
Site-Specific Safety and Health Plan Attachment Approval Fort McClellan, Calhoun County, Alabama

I have read and approve this site-specific safety and health plan attachment for Parcels 230Q-X and 149Q at Fort McClellan, Alabama, with respect to project hazards, regulatory requirements, and IT Corporation procedures.

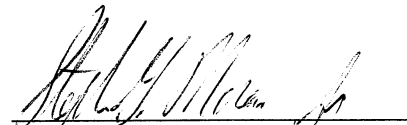

Jeanne Yacoub, PE
Project Manager

4/8/02
Date


William J. Hetrick, CIH
Health & Safety Manager



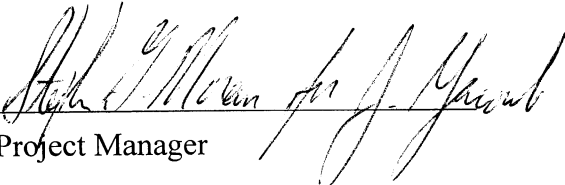
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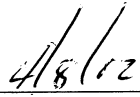

Jeff Tarr
Site Coordinator

4/8/02
Date

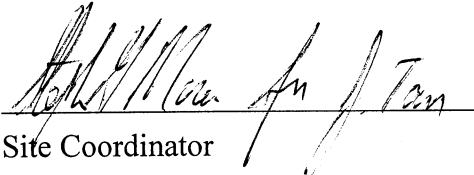
Acknowledgements


The approved version of this site-specific safety and health plan (SSHP) attachment for Parcels 230Q-X and 149Q, Fort McClellan, Calhoun County, Alabama, has been provided to the site coordinator. I acknowledge my responsibility to provide the site coordinator with the equipment, materials, and qualified personnel to implement fully all safety requirements in this SSHP attachment. I will formally review this plan with the health and safety staff every 6 months until project completion.


Project Manager


Date

I acknowledge receipt of this SSHP attachment from the project manager, and that it is my responsibility to explain its contents to all site personnel and cause these requirements to be fully implemented. Any change in conditions, scope of work, or other change that might affect worker safety requires me to notify the project manager and the health and safety manager.


Site Coordinator


Date

Site-Specific Safety and Health Plan Acknowledgement Form

I have been informed of and will abide by the procedures set forth in this site-specific safety and health plan attachment for work activities at Parcels 230Q-X and 149Q at Fort McClellan, Calhoun County, Alabama.

Printed Name

Signature

Representing

DateThis image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Fort McClellan Project Emergency Contacts

Range Control Office (Main Post).....(256) 848-6772

Fire Department (off post)911

Ambulance (off post)911

Regional Medical Center(256) 235-5121

Military Police (SSG Busch) (256) 848-5680, 848-4824

DOD Guard Force (Mr. Bolton) (256) 848-5680, 848-4732

Anniston Police Department.....(256) 238-1800

Chemical Agent Emergencies.....(256) 895-1598

 (Mike Smith, CEHNC) cell phone (256) 759-3931

UXO Emergencies(256) 895-1598

 (Mike Smith, CEHNC) cell phone (256) 759-3931

UXO Non emergencies/Reporting Only (Ronald Levy)(256) 848-6853

Baltzell Gate Guard Shack..... (256) 848-5693, 848-3821

National Response Center & Terrorist Hotline.....(800) 424-8802

Poison Control Center.....(800) 222-1222

EPA Region IV(404) 562-8725

Ronald Levy, Chief, FTMC Environmental Management(256) 848-6853

Ellis Pope, U.S. Army Corps of Engineers.....(251) 690-3077

Jeanne Yacoub, IT Project Manager(770) 663-1429

Bill Hetrick, IT H&S Manager(865) 690-3211, ext. 2571; pager (888) 655-9529

Jeff Tarr, IT Site Manager.....(256) 848-3482, 3499

Mike Moore, Fort McClellan Safety Office.....(256) 848-5433

Dr. Jerry H. Berke, Health Resources Occupational Physician.....(800) 350-4511

Fort McClellan Gate Hours

Galloway Gate	Galloway Road. Open 6 am to 6 pm Monday through Friday.
Baltzell Gate	Baltzell Road. Open 24 hours daily, 7 days a week.

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Attachment 1 – Evaluating OE/UXO/CWM in Support of HTRW Activities

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List of Acronyms

See Attachment 1, List of Abbreviations and Acronyms, of the Site-Specific Field Sampling Plan Attachment contained in this binder.

1.0 Site Work Plan Summary

Project Objective. The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to conduct site investigation activities on Parcels 230Q-X and 149Q.

The scope of work includes collection of the following:

- Conduct surface and near-surface UXO surveys over all areas included in the sampling effort and provide downhole UXO support during drilling
- Collect surface soil samples
- Collect subsurface soil samples
- Collect groundwater samples (install permanent residuum monitoring wells)
- Collect surface water and sediment samples.

Attachment 1, *Evaluating Ordnance Explosive (OE)/Unexploded Ordnance (UXO)/Chemical Warfare Material (CWM) Hazards in Support of Hazardous, Toxic, And Radioactive Waste (HTRW) Activities*, confirms that the historical records available for the parcels have been reviewed and that UXO support is required for all site activities. Figures 1-1 and 1-2 in the site-specific field sampling plan (SFSP) show the site map and the location of Parcels 230Q-X and 149Q. Additionally, based on all available information, it is anticipated that the potential for chemical warfare agents is low; no real-time air monitoring for chemical warfare materials will be required.

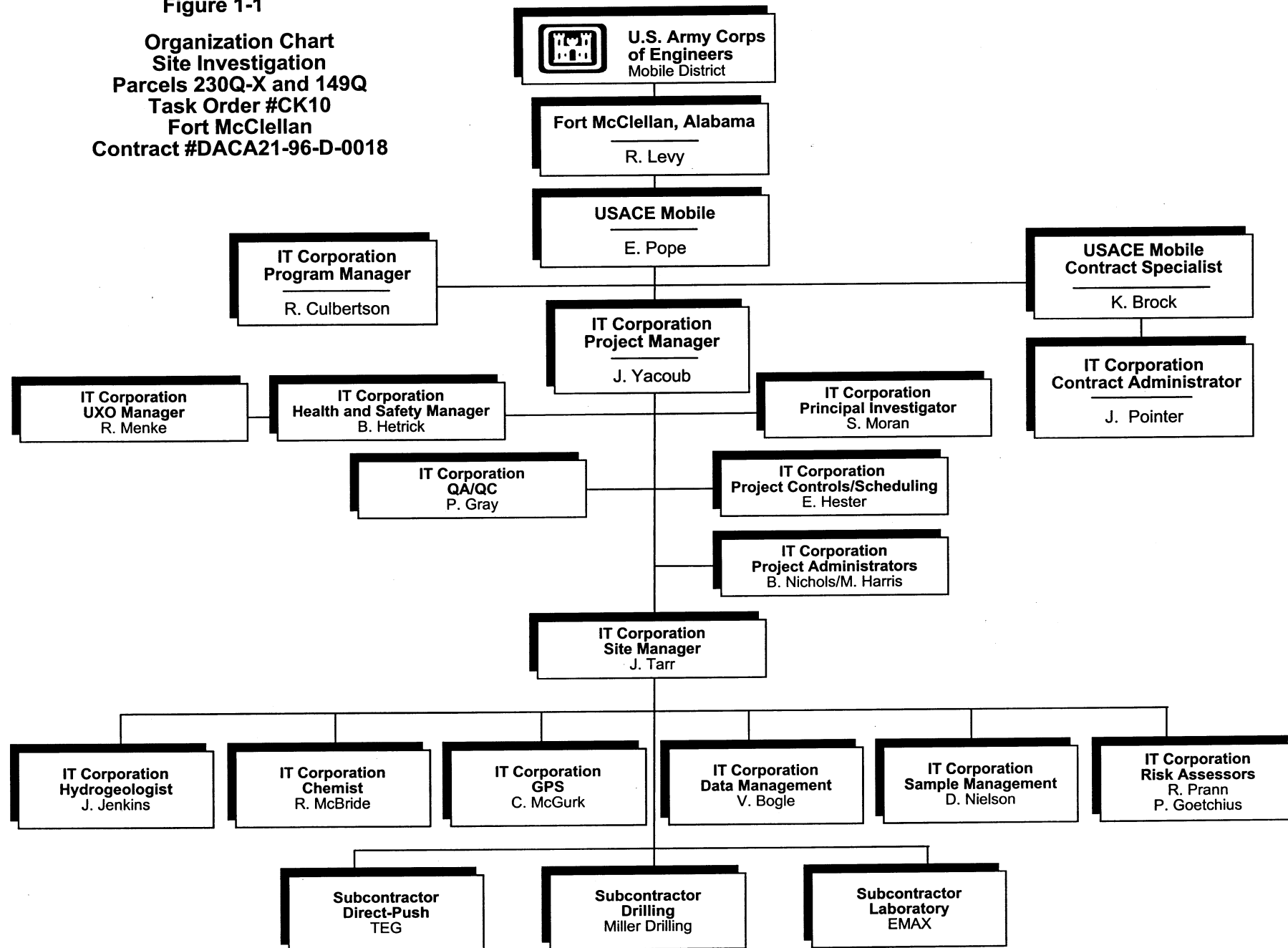
UXO surface sweeps and downhole surveys of soil borings will be required to support field activities at this site. The surface sweeps and downhole surveys will be conducted to identify anomalies for the purpose of UXO avoidance. The site-specific UXO safety plan will be used to support sample collection activities for this investigation and will provide specific instructions if incidental ordnance, explosives, or UXO are encountered and require avoidance.

At completion of the field activities and sample analysis, draft and final reports will be prepared to summarize the results of the activities, to evaluate the absence or presence of potential site-specific chemicals at this site, and to recommend further actions, if appropriate. Range sampling reports will be prepared in accordance with current guidelines of the U.S. Environmental Protection Agency, Region IV, and the Alabama Department of Environmental Management.

Personnel Requirements. Up to 15 employees are anticipated for this scope of work. Figure 1-1 of this plan shows the organization chart for the site investigations addressed in this site-specific safety and health plan (SSHP).

Note: All personnel on this site shall have received training, informational programs, and medical surveillance as outlined in the installation-wide safety and health plan for site investigations at FTMC and be familiar with the requirements of this SSHP. This SSHP must be used in conjunction with the installation wide safety and health plan and the site-specific UXO safety plan, which provides technical guidance for OE avoidance.

Figure 1-1
Organization Chart
Site Investigation
Parcels 230Q-X and 149Q
Task Order #CK10
Fort McClellan
Contract #DACA21-96-D-0018



2.0 Site Characterization and Analysis

2.1 Anticipated Hazards

The activity hazard analysis in Chapter 5.0 contains project-specific practices utilized to reduce or eliminate anticipated site hazards. The activity hazard analysis indicates specific chemical and physical hazards that may be present and encountered during each task from on-site operations. Below each task is a list of hazards and specific actions that will be taken to control the respective hazards. These control measures may include work practice controls, engineering controls, and/or use of appropriate personal protective equipment (PPE). Site control with the use of specific work zones (support zone, contamination reduction zone, and exclusion zone) is addressed in Chapter 7.0 of Appendix A of the IT, August 2002, *Draft Revision 3, Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama*.

Detailed descriptions of Parcels 230Q-X and 149Q can be found in Chapter 1.0 (Project Description) of the SFSP and should be reviewed to supplement this SSHP. Potential contaminant sources at Parcels 230Q-X and 149Q are primarily unknown, but may include nitroexplosives (nitroaromatic and nitroamine) and metals. Lead in soil will be the most likely metal encountered, since live fire was conducted at the ranges. Additional metals associated with the live fire of ammunition include arsenic, antimony, and barium. Ten percent of each sample type will be analyzed for selected volatile organic compounds, semivolatile organic compounds, chlorinated pesticides, herbicides, and organophosphate pesticides. Engineering controls (dust suppression) will be required where site activities generate visible dust emissions from vehicle and equipment operations performed off established roadways and within the surface danger zone or range fan firing direction and impact areas. The site and proposed sample location maps in the SFSP illustrate impact and range fan areas where the highest potential for lead contamination is anticipated.

Procedures contained in the site-specific UXO safety plan shall be followed for all site activities associated with this investigation.

Table 2-1 contains the toxicological and physical properties of chemicals anticipated to be present or to be used at Parcels 230Q-X and 149Q.

Table 2-1

**Toxicological and Physical Properties of Chemicals
Former Antitank Range, Parcel 230Q-X, and Former Rifle Range, Parcel 149Q
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 4)

Substance [CAS]	IP ^a (eV)	Odor Threshold (ppm)	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
Arsenic [7440-38-2]	NONE	NONE	Inh Ing Con	Cough, diarrhea, shortness of breath, vomiting, grey skin. Redness	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	0.01 mg/m ³ 0.01 mg/m ³	.002 mg/m ³ (Ca)	PEL TLV REL	5 mg/m ³
Antimony [7440-36-0]	NONE	NONE	Inh Ing Con	Coughing, abdominal pain, burning sensation, vomiting, diarrhea,	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow : Immediate medical attention	0.5 mg/m ³ 0.5 mg/m ³ 0.5 mg/m ³		PEL TLV REL	50 mg/m ³
Barium [7440-39-3]	NONE	NONE	Inh Ing Con	Cough, sore throat Redness	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	0.5 mg/m ³ 0.5 mg/m ³ 0.5 mg/m ³		PEL TLV REL	NA
Fuel oil (diesel oil, medium)	NONE	NONE	Ing Inh Con	Ingestion causes nausea, vomiting, and cramps; depressed central nervous system, headache, coma, death; pulmonary irritation; kidney and liver damage; aspiration causes severe lung irritation, coughing, gagging, dyspnea, substernal stress, pulmonary edema; bronchopneumonia; excited, then depressed, central nervous system.	Eye: Irrigate promptly Skin: Soap wash Breath: Respiratory support Swallow: Immediate medical attention Aspiration: Immediate medical attention	NONE		PEL TLV REL	

Table 2-1

**Toxicological and Physical Properties of Chemicals
Former Antitank Range, Parcel 230Q-X, and Former Rifle Range, Parcel 149Q
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 4)

Substance [CAS]	IP ^a (eV)	Odor Threshold (ppm)	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
Gasoline [8006-61-9]		0.3	Inh Ing Con	Intoxication, headaches, blurred vision, dizziness, nausea; eye, nose throat irritation; potential kidney and other cancers. Carcinogenic.	Eye: Irrigate immediately (15 min) Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	- 300 ppm Ca, lowest feasible conc. (LOQ 15 ppm)	- 500 ppm	PEL TLV REL	1400 ppm (10% LEL)
Lead {7439-92-1}	N/A	N/A	Inh Ing Con	Lightheadedness; nausea, headache; numbness of the extremities, muscular weakness; irritation of the eyes and nose; dermatitis; chemical pneumonia; giddiness.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	0.05 mg/m ³ 0.05 mg/m ³ 0.1mg/m ³		PEL TLV REL	100 mg/m ³
Isopropyl alcohol (isopropanol) [67-63-0]	10.16	43-200	Inh Ing Con	Mild irritation of the eyes, nose, and throat; drowsiness, dizziness, headache; dry, cracked skin.	Eye: Irrigate immediately Skin: Water flush Breath: Respiratory support Swallow: Immediate medical attention	400 ppm 400 ppm 400 ppm	500 ppm 500 ppm 500 ppm	PEL TLV REL	2,000 ppm
Motor Oil [NA]	NONE	NONE	Inh Ing	Irritated eyes, skin, respiratory system; usually only a problem if misted or ingested.	Eye: Irrigate immediately (15 min) Skin: Soap wash immediately Swallow: Immediate medical attention	NONE	NONE	PEL TLV REL	
Nitric acid [7697-37-2]	11.95	0.3-1	Inh Ing Con	Irritated eyes, mucous membranes, and skin; delayed pulmonary edema, pneumonitis, bronchitis; dental erosion.	Eye: Irrigate immediately Skin: Water flush promptly Breath: Respiratory support Swallow: Immediate medical attention	2 ppm 2 ppm 2 ppm	- 4 ppm 4 ppm	PEL TLV REL	25ppm

Table 2-1

**Toxicological and Physical Properties of Chemicals
Former Antitank Range, Parcel 230Q-X, and Former Rifle Range, Parcel 149Q
Fort McClellan, Calhoun County, Alabama**

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Substance [CAS]	IP ^a (eV)	Odor Threshold (ppm)	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
Nitroglycerin [55-63-0]	NA	NA	Inh Ing Con	Abdominal ramps, blue lips and fingernails, dizziness, headache, labored breathing	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	- 0.46 mg/m ³ skin -	.2 mg/m ³ skin - 0.1 mg/m ³ skin	PEL TLV REL	75 mg/m ³
Portland cement [65997-15-1]	NA	NA	Inh	Fine gray powder that can be irritating if inhaled or in eyes.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	5 mg/m ³ respirable dust 15 mg/m ³ total dust 10 mg/m ³ 10 mg ³ / total dust 5 mg/m ³ respirable dust	- - -	PEL TLV REL	5000 mg/m ³
Sodium hydroxide [1310-73-2]	NA	NA	Inh Ing Con	Irritated nose; pneumonitis; burns eyes, and skin; temporary loss of hair.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention	2 mg/m ³ - -	- C 2 mg/m ³ C 2 mg/m ³	PEL TLV REL	10 mg/m ³

IP = Ionization potential (electron volts).

^bRoute = Inh, Inhalation; Abs, Skin absorption; Ing, Ingestion; Con, Skin and/or eye contact.^cTWA = Time-weighted average. The TWA concentration for a normal work day (usually 8 or 10 hours) and a 40-hour work week, to which nearly all workers may be repeatedly exposed, day after day without adverse effect.^dSTEL = Short-term exposure limit. A 15-minute TWA exposure that should not be exceeded at any time during a workday, even if the TWA is not exceeded.^ePEL = Occupational Safety and Health Administration (OSHA) permissible exposure limit (29 CFR 1910.1000, Table Z).

AEL = Airborne Exposure Limit.

TLV = American Conference of Governmental Industrial Hygiene (ACGIH) threshold limit value—TWA.

REL = National Institute for Occupational Safety and Health (NIOSH) recommended exposure limit.

Table 2-1

Toxicological and Physical Properties of Chemicals
Former Antitank Range, Parcel 230Q-X, and Former Rifle Range, Parcel 149Q
Fort McClellan, Calhoun County, Alabama

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¹IDLH (NIOSH)—Immediately dangerous to life or health (NIOSH). Represents the maximum concentration from which, in the event of respirator failure, one could escape within 30 minutes without a respirator and without experiencing any escape-impairing or irreversible health effects.

NE = No evidence could be found for the existence of an IDLH (NIOSH Pocket Guide to Chemical Hazards, Pub. 1998).

C = Ceiling limit value which should not be exceeded at any time.

Ca = Carcinogen.

NA = Not applicable.

? = Unknown.

LEL = Lower explosive limits.

LC₅₀ = Lethal concentration for 50 percent of population tested.

LD₅₀ = Lethal dose for 50 percent of population tested.

NIC = Notice of intended change (ACGIH).

References:

American Conference of Governmental Industrial Hygienists Guide to Occupational Exposure Values, 2001, compiled by the American Conference of Governmental Industrial Hygienists.

Clayton, George D., Clayton, F. E., Patty's Industrial Hygiene and Toxicology, 3rd ed., John Wiley & Sons, New York.

Documentation of TLVs and BEIs, American Conference of Governmental Industrial Hygienists, 6th ed., 1998.

Lewis, Richard J., Sr., 1992, Sax's Dangerous Properties of Industrial Materials, 8th ed., Van Nostrand Reinhold, New York.

Micromedex Tomes Plus (R) System, 1992, Micromedex, Inc.

National Institute for Occupational Safety and Health Pocket Guide to Chemicals, Pub. 1998, National Institute for Occupational Safety and Health.

Odor Threshold for Chemicals with Established Occupational Health Standards, American Industrial Hygiene Association, 1989.

Respirator Selection Guide, 3M Occupational Health and Safety Division, 1993.

Workplace Environmental Exposure Levels, American Industrial Hygiene Association, 1992.

2.2 General Site Information

Location of Site. FTMC is located in the foothills of the Appalachian Mountains of northeastern Alabama near the cities of Anniston and Weaver in Calhoun County. FTMC is approximately 60 miles northeast of Birmingham, 75 miles northwest of Auburn, and 95 miles west of Atlanta, Georgia. FTMC consists of three main areas of government-owned and leased properties: the Main Post, Pelham Range, and Choccolocco Corridor (lease terminated in May 1998).

Former 37mm Antitank Range, Parcel 230Q-X was identified as a 37mm antitank range from the 1946 Sanitary Sewerage System map by Environmental Science and Engineering, Inc. The environmental baseline survey reports that Former Rifle Range, Parcel 149Q, appeared on a 1959 historical map. Former 37mm Antitank Range and Former Rifle Range are located in north-central Main Post, north of the Ammunition Supply Point, Parcels 199(7) and 197(7), and west of the Chemical Defense Training Facility, Parcel 126Q-CWM.

Duration of Planned Employee Activity. Employee activity duration is anticipated to be less than one month.

Site Description. The area of investigation has three documented uses since World War II. This area was constructed as a 37mm antitank range during World War II with a direction of fire to the east. The range was equipped with a track system used to move targets. By 1958, the track had been removed and a new firing line established for an M-1 Rifle Transition Table believed to be the Former Rifle Range, Parcel 149Q. By 1967, the range was closed and the area listed as Training Area T-31.

IT personnel conducted site walks in December 2001 to visually inspect this area. In the center portion of the parcel are two areas of pop-up targets. The remnants of a platform behind a berm were noted in the north-central portion of the parcel, and a steel pole with three pulleys behind a berm was located in the south-central portion. It is believed that these items are remnants of a moving target system. Other surface features noted included a shallow, east-west trending trench in the east-central portion of the parcel, a potential impact crater located approximately 1,200 feet downrange, and downrange berms. Several 35-gallon drums were located on the north-central portion of the parcel. Along the western boundary of the parcel are three temporary well locations related to the investigation at the Fill Area North of Landfill No. 2, Parcel 230(7). Two

recently installed permanent well locations related to the investigation at Training Area T-31 were identified in the northwest portion of the parcel.

Pathways for Hazardous Substance Dispersion. Possible pathways for hazardous substances in the area are soils, sediments, surface water, and groundwater.

3.0 Personal Protective Equipment

The work activities will begin in the following levels of protection. Also, a completed description of Level D, Modified Level D, and Level C PPE is provided.

Task	Initial Level of PPE
Initial UXO avoidance sweep and equipment staging	Level D
Utility clearance	Level D
Surface water, sediment and surface soil sampling (Including x-ray fluorescence [XRF])	Level D
Subsurface soil and groundwater sampling	Modified Level D*
Monitoring well installation and downhole UXO avoidance	Modified Level D*
Surveying	Level D

*Initial level will be raised to Level C or higher if air monitoring results in the breathing zone (BZ) are greater than action levels.

Level D. The minimal level of protection that will be required of IT personnel at the site will be Level D. The following equipment will be used for Level D protection:

- Coveralls or work clothing
- Leather work gloves (when necessary)
- Steel-toed safety boots
- Safety glasses
- Hardhat
- Hearing protection (when working near/adjacent to operating equipment).

Modified Level D. The following equipment will be used for Level D-Modified protection:

- Permeable Tyvek, Kleenguard, or its equivalent
- Latex boot covers
- Nitrile, heavy work, or latex gloves
- Steel-toed safety boots
- Safety glasses
- Hardhat
- Hearing protection (when working near/adjacent to operating equipment).

Note: In addition to Modified Level D PPE, the operator of high-pressure water jetting equipment (pressure washers) shall wear metatarsal guards for protection of the legs and feet and a face shield for protection from splashes (refer to IT H&S Procedure HS 303).

Level C. Level C protection will not be used unless air-monitoring data indicate the need for upgrade; however, the equipment shall be readily available on site. The following equipment will be used for Level C protection:

- National Institute of Occupational Safety and Health/Mine Safety and Health Administration-approved full-face, air-purifying respirator equipped with organic vapor/acid gas cartridge in combination with high-efficiency particulate air filter
- Hooded, Saran-coated Tyvek, taped at gloves, boots, and respirator
- Nitrile gloves (outer)
- Latex or lightweight nitrile gloves (inner)
- Neoprene steel-toed boots or polyvinyl chloride overbooties/steel-toed safety boots
- Hardhat
- Hearing protection (when working near/adjacent to operating equipment).

Note: In addition to Level C PPE, the operator of high-pressure water jetting equipment (pressure washers) shall wear metatarsal guards for protection of the legs and feet and a face shield for protection from splashes (refer to IT H&S Procedure HS 303).

4.0 Site Monitoring

The environmental contaminants of concern resulting from former activities at Parcels 230Q-X and 149Q are primarily unknown but, based on land-use history, probably include nitroexplosives, white phosphorus, and lead.

Table 4-1 contains action levels for site monitoring on Parcel 230Q-X.

Chemical. The site safety and health officer or task geologist shall perform air monitoring during the performance of site activities and ground-intrusive operations. A calibrated photoionization detector (i.e., Hnu DL-101 or equivalent) organic vapor analyzer will be utilized to monitor the sampling locations and BZs to determine if any organic material may be present that would necessitate upgrading the protection level. A calibrated combustible gas/oxygen indicator will be utilized to monitor the borehole, work areas and BZs to determine if any combustible/flammable gases may be present that would necessitate evacuation of the work area. A Miniram PDM-3 or equivalent aerosol monitor shall be used to monitor airborne dust, since lead is a potential concern. Table 4-2 contains the required air monitoring frequency and location for site monitoring at the parcels under investigation.

Radiological. Radiation hazards from previous site activities are not anticipated. However, if field screening for lead contamination in the soil is considered within range fans, use of the NITON x-ray fluorescence (XRF) instrument requires general radiation awareness training. The XRF instrumentation contains cadmium₁₀₉, americium₂₄₁, and iron₅₅ sealed radioactive sources. Operators of the XRF shall be trained in the safe use of the instrument and follow all required manufacturer's instructions. Leak-detection testing shall have been performed on the XRF within the last six months and certificates of analysis included in the shipping container. Required licensing documentation and storage requirements shall be enforced. Exposure to radiation is related to three factors: time, distance and shielding. Human exposure to radiation is typically measured in rems, or in one-thousandths of a rem, called millirems (mR). The allowable limit in the United States for occupational exposure is 5,000 mR per year for whole-body exposure and 50,000 mR for shallow penetration of extremities. Exposure from a properly used NITON will be less than 50 mR per year, even if the instrument is used 2,000 hours per year.

Table 4-1

Action Levels
Former Antitank Range, Parcel 230Q-X, and Former Rifle Range, Parcel 149Q
Fort McClellan, Calhoun County, Alabama

(Page 1 of 2)

When in Level C PPE

Analyte	Action Level ^a	Required Action ^b
VOCs (volatile organic compound)	≥ 10 ppm above background in breathing zone (BZ)	Stop work, evacuate work area, upgrade to Level B; Notify CIH
Dust	> 5.0 mg/m ³ above background in BZ	Stop operations, Notify CIH.
LEL (lower explosive limit)	≤ 10 % LEL ≥ 10 % LEL	Normal operations Stop work, identify source

When in Level D Modified/D PPE

Analyte	Action Level ^a	Required Action ^b
VOCs	≥ 1 ppm above background in BZ	Stop activities, suspend work activities for 15 to 30 minutes, if readings are sustained then upgrade to Level C PPE; Notify CIH
Dust	≥ 0.5 mg/m ³ above background in BZ	Stop work, Initiate dust control, upgrade to Level C PPE if dust control is not effective; Notify CIH
LEL (lower explosive limit)	≤ 10 % LEL ≥ 10 % LEL	Normal operations Stop work, identify source. Monitor for VOC's

Table 4-1

**Action Levels
Former Antitank Range, Parcel 230Q-X, and Former Rifle Range, Parcel 149Q
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 2)

When in Support Zone

Analyte	Action Level ^a	Required Action ^b
VOCs	≥ 1 ppm above background in BZ	Evacuate support zone and re-establish perimeter of exclusion zone.
Dust	> 0.5 mg/m ³ above background in BZ	Stop work, Initiate dust control

^a Four instantaneous peaks in any 15-minute period or a sustained reading for 5 minutes in excess of the action level will trigger a response.

^b Contact with the H&S manager must be made prior to continuance of work. The H&S manager may then initiate perimeter/integrated air sampling along with additional engineering controls.

No one is permitted to downgrade levels of PPE without authorization from the H&S manager.

Table 4-2

**Air Monitoring Frequency and Location
Former Antitank Range, Parcel 230Q-X, and Former Rifle Range, Parcel 149Q
Fort McClellan, Calhoun County, Alabama**

Work Activity	Instrument	Frequency	Location
Staging equipment and UXO avoidance sweeps	OV Monitor Miniram	Initially for area Periodically	(BZ) of employees
Sampling (surface water, surface soil, sediment, and XRF analysis)	OV Monitor Miniram	Periodically Periodically	BZ of employees BZ of employees
Monitoring well installation and subsurface soil sampling	OV Monitor Miniram LEL/ O ₂	Periodically Periodically Periodically	BZ of employees BZ of employees Bore hole
XRF Sampling	Miniram	Periodically	BZ of employees

OV = Organic vapor as determined by a PID or FID.

Miniram = Aerosol (dust) monitor (direct reading instrument).

LEL/O₂ = Lower Explosive Limit/Oxygen as determined by a Combustible Gas Meter.

BZ = Breathing Zone of employee(s).

Unexploded Ordnance. UXO support for sampling activities is specified in the site-specific UXO safety plan developed for Parcels 230Q-X and 149Q. The UXO specialists will perform UXO avoidance sweeps prior to moving the heavy equipment onto the site. During this operation, UXO on the surface will be detected and marked for avoidance during field operations. Additionally, downhole magnetometer surveys will be performed to detect metal objects in the path of sampling equipment or boring apparatus. The sampling/boring location will be moved to avoid subsurface metal objects. It will be standard practice to conduct UXO avoidance for all intrusive activities, and the appropriate supplemental UXO procedures to the installation-wide OE management plan will be followed.

If UXO is encountered, personnel will contact the site manager and UXO specialist immediately. Personnel will evacuate the immediate area and secure it.

5.0 Activity Hazard Analysis

The attached activity hazard analysis (Table 5-1) is provided for the following activities:

- Initial UXO avoidance sweep and equipment staging.
- Installation of monitoring wells.
- Surface soil, subsurface soil, groundwater, surface water and sediment sampling.
- Surveying.
- Moving and shipping collected samples.
- Disposal of investigative derived waste (forklift operations).
- High-pressure water jetting operations.

All injuries and illnesses must be immediately reported to the site manager and the site safety and health officer, who will then notify off-site personnel and organizations as necessary.

If hospital care must be provided, the victim shall be treated at Northeast Regional Medical Center. Directions to the hospital from Parcels 230Q-X and 149Q are provided in Figure 5-1 of this plan.

Table 5-1

**Activity Hazard Analysis
Former Antitank Range, Parcel 230Q-X, and Former Rifle Range, Parcel 149Q
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 14)

Activity	Potential Hazards	Recommended Controls
Initial UXO avoidance sweep and equipment staging	Slip, trip, and fall hazards	<ul style="list-style-type: none"> Determine best access route before transporting equipment. Practice good housekeeping; keep work area picked up and clean as feasible. Continually inspect the work area for slip, trip, and fall hazards. Look before you step; ensure safe and secure footing.
	Heavy lifting	<ul style="list-style-type: none"> Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment.
	Falling objects	<ul style="list-style-type: none"> Stay alert and clear of materials suspended overhead; wear hard hat and steel-toed boots.
	Flying debris, dirt, dust, etc.	<ul style="list-style-type: none"> Wear safety glasses/goggles; ensure that eye wash is in proper working condition.
	Pinch points	<ul style="list-style-type: none"> Keep hands, fingers, and feet clear of moving/suspended materials and equipment. Beware of contact points. Stay alert at all times!
	Cuts/bruises	<ul style="list-style-type: none"> Use cotton or leather work gloves for material handling.
	Bees, spiders, and snakes	<ul style="list-style-type: none"> Inspect work area carefully and avoid placing hands and feet into concealed areas.
	Ticks	<ul style="list-style-type: none"> Wear light colored clothing (can see ticks better). Mow vegetated and small brush areas. Wear insect repellant. Wear long sleeves and long pants. Visually check oneself promptly and frequently after exiting the work area.
	Fire	<ul style="list-style-type: none"> Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.
	Hazard communication	<ul style="list-style-type: none"> Label all containers as to contents and dispose of properly. Ensure Material Safety Data Sheets (MSDS) are available for hazardous chemicals used on site.
	Noise	<ul style="list-style-type: none"> Sound levels above 85 decibels (dBA) mandates hearing protection.
	Lighting	<ul style="list-style-type: none"> Adequate lighting will be provided to ensure a safe working environment.

Table 5-1

**Activity Hazard Analysis
Former Antitank Range, Parcel 230Q-X, and Former Rifle Range, Parcel 149Q
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 14)

Activity	Potential Hazards	Recommended Controls
Initial UXO avoidance sweep and equipment staging (continued)	Cold stress	<ul style="list-style-type: none">• Workers should wear insulated clothing when temperatures drop below 40 degrees Fahrenheit (°F).• Drink warm beverages on breaks. Refrain from drinking caffeinated beverages.• Remove wet clothing promptly.• Take breaks in warm areas.• Reduce work periods as necessary.• Layer work clothing.
	Poison ivy/oak/sumac	<ul style="list-style-type: none">• Avoid plant areas if possible.• Wear long sleeves and long pants.• Promptly wash clothing that has contacted poisonous plants.• Wash affected areas immediately with soap and water.
	Heat rash	<ul style="list-style-type: none">• Keep the skin clean and dry.• Change perspiration-soaked clothing, as necessary.• Bathe at end of work shift or day.• Apply powder to affected area.
	Heat cramps	<ul style="list-style-type: none">• Drink plenty of cool fluids even when not thirsty.• Provide cool fluid for work crews.• Move victim to shaded, cool area.
	Heat exhaustion	<ul style="list-style-type: none">• Conduct physiological worker monitoring as needed (i.e., heart rate, oral temperature).• Set up work/rest periods.• Use the "buddy system."• Allow workers time to acclimate.• Have ice packs available for use.• Take frequent breaks.

Table 5-1

**Activity Hazard Analysis
Former Antitank Range, Parcel 230Q-X, and Former Rifle Range, Parcel 149Q
Fort McClellan, Calhoun County, Alabama**

(Page 3 of 14)

Activity	Potential Hazards	Recommended Controls
Initial UXO avoidance sweep and equipment staging (continued)	Heat stroke	<ul style="list-style-type: none">• Evaluate possibility of night work.• Perform physiological monitoring on workers during breaks.• Wear body cooling devices.
	Contact with moving equipment/vehicles	<ul style="list-style-type: none">• Work area will be barricaded/demarcated.• Equipment will be laid out in an area free of traffic flow.• Barricades shall be used on or around work areas when it is necessary to prevent the inadvertent intrusion of pedestrian traffic.• Barriers shall be used to protect workers from vehicular traffic.• Barriers shall be used to guard excavations adjacent to streets or roadways.• Flagging shall be used for the short term (less than 24 hours) to identify hazards until proper barricades or barriers are provided.• Heavy equipment shall have backup alarms.
	Forklift operations	<ul style="list-style-type: none">• Use qualified and trained forklift operators.• The operator shall not exceed the load capacity rating for the forklift.• The load capacity shall be clearly visible on the forklift.• Forklift operators shall inform their supervisor of any prescribed medication that they are taking that would impair their judgement.
	Portable electric tools	<ul style="list-style-type: none">• Portable electric tools that are unsafe due to faulty plugs, damaged cords, or other reasons, shall be tagged (do not use) and removed from service.• Portable electric tools and all cord and plug connected equipment shall be protected by a ground-fault circuit interrupter (GFCI) device.• Electrical tools shall be inspected daily prior to use.

Table 5-1

**Activity Hazard Analysis
Former Antitank Range, Parcel 230Q-X, and Former Rifle Range, Parcel 149Q
Fort McClellan, Calhoun County, Alabama**

(Page 4 of 14)

Activity	Potential Hazards	Recommended Controls
Initial UXO avoidance sweep and equipment staging (continued)	Extension cords	<ul style="list-style-type: none">• Extension cords that have faulty plugs, damaged insulation, or are unsafe in any way shall be removed from service.• Cords shall be protected from damage from sharp edges, projections, pinch points (doorways), and vehicular traffic.• Cords shall be suspended with a nonconductive support (rope, plastic ties, etc.).• Cords shall be designed for hard duty.• Cords shall be inspected daily.
	Lightning strikes	<ul style="list-style-type: none">• Whenever possible, halt activities and take cover.• If outdoors, stay low to the ground.• Limit the body surface area that is in contact with the ground (i.e., kneeling on one knee is better than laying on the ground).• Seek shelter in a building if possible.• Stay away from windows.• If available, crouch under a group of trees instead of one.• Remain 6 feet away from tree trunk if seeking shelter beneath tree(s).• If in a group, keep 6 feet of distance between people.
	Thunderstorms, tornados	<ul style="list-style-type: none">• Listen to radio or TV announcements for pending weather information.• Cease field activities during thunderstorm or tornado warnings.• Seek shelter. Do not try to outrun a tornado.
Surveying	Slip, trip, and fall hazards	<ul style="list-style-type: none">• Site workers will be required to wear hard hat, safety glasses with side shields, work gloves, and steel-toe boots when working in the field.• Provide adequate lighting in all work areas.• Whenever possible, avoid routing cords and hoses across walking pathways.• Flag or cover inconspicuous holes to protect against falls.• Work areas will be kept clean and orderly.• Garbage and trash will be disposed of daily in approved refuse containers.• Tools and accessories will be properly maintained and stored.• Work areas and floors will be kept free of dirt, grease, and slippery materials.

Table 5-1

**Activity Hazard Analysis
Former Antitank Range, Parcel 230Q-X, and Former Rifle Range, Parcel 149Q
Fort McClellan, Calhoun County, Alabama**

(Page 5 of 14)

Activity	Potential Hazards	Recommended Controls
Surveying (continued)	Traffic accidents	<ul style="list-style-type: none"> Place physical barrier (i.e., barricades, fencing) around work areas regularly occupied by pedestrians. If working adjacent to roadways, have workers wear fluorescent orange vests. Use warning signs or lights to alert oncoming traffic. Assign flag person(s) if necessary to direct local traffic. Set up temporary parking locations outside the immediate work area. Motor vehicle operators shall obey all posted traffic signs, signals, and speed limits. Pedestrians have the right-of-way. Wear seat belts when vehicles are in motion.
	Wildlife hazards	<ul style="list-style-type: none"> Workers should be cautious when driving through the site in order to avoid encounters with passing animals.
	Biological hazards	<ul style="list-style-type: none"> Walking through overgrown grass areas, watch for snakes (rattlesnakes, moccasins, copperheads).
	Ticks	<ul style="list-style-type: none"> Wear light colored clothing (can see ticks better). Mow vegetated and small brush areas. Wear insect repellent. Wear long sleeves and long pants. Visually check oneself promptly and frequently after exiting the work area.
	Poison ivy/oak/sumac	<ul style="list-style-type: none"> Avoid plant areas if possible. Wear long sleeves and long pants. Promptly wash clothing that has contacted poisonous plants. Wash affected areas immediately with soap and water.
	UXO	<ul style="list-style-type: none"> UXO avoidance monitoring will be conducted by a UXO specialist prior to beginning activities. If UXO is encountered, cease all activities, mark the location, and notify the site manager.

Table 5-1

**Activity Hazard Analysis
Former Antitank Range, Parcel 230Q-X, and Former Rifle Range, Parcel 149Q
Fort McClellan, Calhoun County, Alabama**

(Page 6 of 14)

Activity	Potential Hazards	Recommended Controls
Groundwater Sampling	Cross-contamination and contact with potentially contaminated materials	<ul style="list-style-type: none">• Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination.• Avoid skin contact with water.• Handle samples with care.• Only essential personnel will be in the work area.• Real-time air monitoring will take place before and during sampling activities.• All personnel will follow good hygiene practices.• Proper decontamination procedures will be followed.• All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.
	Cut hazards	<ul style="list-style-type: none">• Use care when handling glassware.• Wear adequate hand protection.
	Hazard communication	<ul style="list-style-type: none">• MSDSs shall be obtained for chemicals brought on site.• Label all containers as to contents.
	Strains/sprains	<ul style="list-style-type: none">• Use the proper tool for the job being performed.• Get assistance if needed.• Avoid twisting/turning while pulling on tools, moving equipment, etc.
	Spills/residual materials	<ul style="list-style-type: none">• Absorbent material and containers will be kept available where leaks or spills may occur.
	Lighting	<ul style="list-style-type: none">• Adequate lighting will be provided to ensure a safe working environment.
	Unattended worker	<ul style="list-style-type: none">• Use "buddy system" - visual contact will be maintained with the sampling technician during sampling activities.

Table 5-1

**Activity Hazard Analysis
Former Antitank Range, Parcel 230Q-X, and Former Rifle Range, Parcel 149Q
Fort McClellan, Calhoun County, Alabama**

(Page 7 of 14)

Activity	Potential Hazards	Recommended Controls
Soil Boring and Surface/Subsurface Sampling (XRF)	Cross-contamination and contact with potentially contaminated materials	<ul style="list-style-type: none"> • Stop immediately at any sign of obstruction. • Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination. • Only essential personnel will be in the work area. • Real-time air monitoring will take place before and during sampling activities. • All personnel will follow good hygiene practices. • Proper decontamination procedures will be followed. • All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.
	Cut hazards	<ul style="list-style-type: none"> • Use care when handling glassware. • Wear adequate hand protection.
	Slip, trip, and fall hazards	<ul style="list-style-type: none"> • Site workers will be required to wear hard hat, safety glasses with side shields, work gloves, and steel-toe/shank boots when working in the field. • Whenever possible, avoid routing cords and hoses across walking pathways. • Flag or cover inconspicuous holes to protect against falls.
	Bees, spiders, and snakes	<ul style="list-style-type: none"> • Workers shall inspect the work area carefully and avoid placing hands and feet into concealed areas. • Evaluate need for sensitive workers to have prescribed antibiotic or medicine to combat onset of symptoms.
	Poison ivy/oak/sumac	<ul style="list-style-type: none"> • Avoid plant areas if possible. • Wear long sleeves and long pants. • Promptly wash clothing that has contacted poisonous plants. • Wash affected areas immediately with soap and water.
	Cold stress	<ul style="list-style-type: none"> • Workers should wear insulated clothing when temperatures drop below 40°F. • Drink warm beverages on breaks. Refrain from drinking caffeinated beverages. • Remove wet clothing promptly. • Take breaks in warm areas. • Reduce work periods as necessary. • Layer work clothing.

Table 5-1

**Activity Hazard Analysis
Former Antitank Range, Parcel 230Q-X, and Former Rifle Range, Parcel 149Q
Fort McClellan, Calhoun County, Alabama**

(Page 8 of 14)

Activity	Potential Hazards	Recommended Controls
Soil Boring and Surface/Subsurface Sampling (XRF) (continued)	Access/egress hazards	<ul style="list-style-type: none">• Use qualified and trained bushhog operator.• Keep employees out of the bushhog work area.• Utilize good housekeeping practices.• Keep aisleways, pathways, and work areas free of obstruction.• Clean ice or snow off of walkways or work stations.• Use appropriate footwear for the task assigned.
	Heat rash	<ul style="list-style-type: none">• Keep the skin clean and dry.• Change perspiration-soaked clothing, as necessary.• Bathe at end of work shift or day.• Apply powder to affected area.
	Heat cramps	<ul style="list-style-type: none">• Drink plenty of cool fluids even when not thirsty.• Provide cool fluid for work crews.• Move victim to shaded, cool area.
	Heat exhaustion	<ul style="list-style-type: none">• Conduct physiological worker monitoring as needed (i.e., heart rate, oral temperature).• Set up work/rest periods.• Use the buddy system.• Allow workers time to acclimate.• Have ice packs available for use.• Take frequent breaks.
	Heat stroke	<ul style="list-style-type: none">• Evaluate possibility of night work.• Perform physiological monitoring on workers during breaks.• Wear body cooling devices.

Table 5-1
Activity Hazard Analysis
Former Antitank Range, Parcel 230Q-X, and Former Rifle Range, Parcel 149Q
Fort McClellan, Calhoun County, Alabama

(Page 9 of 14)

Activity	Potential Hazards	Recommended Controls
Soil Boring and Surface/Subsurface Sampling (XRF) (continued)	Lightning strikes	<ul style="list-style-type: none"> • Whenever possible, halt activities and take cover. • If outdoors, stay low to the ground. • Limit the body surface area that is in contact with the ground (i.e., kneeling on one knee is better than laying on the ground). • Seek shelter in a building if possible. • Stay away from windows. • If available, crouch under a group of trees instead of one single tree. • If in a group, keep 6 feet of distance between people.
	UXO	<ul style="list-style-type: none"> • UXO avoidance monitoring will be conducted by a UXO specialist prior to beginning activities. • If UXO is encountered, cease all activities, mark the location, and notify the site manager and UXO specialist.
	Accidental exposure to chemical agents	<ul style="list-style-type: none"> • Low-level real-time environmental monitoring will be performed by Quanterra Battelle Quicksilver Center. • Modified Level D personal protective equipment (PPE) will be required. During the first 15 feet depth of each monitoring well installation activity, downhole geophysics will be performed. • Engineering controls will be used as appropriate. • Personnel will be equipped with an emergency egress air supply pack.
Moving and Shipping Collected Samples	Heavy lifting	<ul style="list-style-type: none"> • Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.
	Pinch points	<ul style="list-style-type: none"> • Keep hands, fingers, and feet clear of moving/suspended materials and equipment. • Beware of contact points. • Stay alert at all times!
	Cut hazards	<ul style="list-style-type: none"> • Wear adequate hand protection. Use care when handling glassware.
	Hazard communication	<ul style="list-style-type: none"> • Label all containers as to contents and associated hazards.
	Heavy lifting	<ul style="list-style-type: none"> • Use proper lifting techniques. Lifts greater than 60pounds require assistance or mechanical equipment; size up the lift.

Table 5-1

**Activity Hazard Analysis
Former Antitank Range, Parcel 230Q-X, and Former Rifle Range, Parcel 149Q
Fort McClellan, Calhoun County, Alabama**

(Page 10 of 14)

Activity	Potential Hazards	Recommended Controls
Material Storage	Flammable and combustible liquids	<ul style="list-style-type: none">• Store in NO SMOKING AREA.• Fire extinguisher readily available.• Transfer only when properly grounded and bonded.
Disposal of Investigation-Derived Waste (IDW) (Forklift Operation)	Personnel injury, property damage, and/or equipment damage	<ul style="list-style-type: none">• Use qualified and trained forklift operators.• The operator shall not exceed the load capacity rating for the forklift.• The load capacity shall be clearly visible on the forklift.• Forklift operators shall inform their supervisor of any prescribed medication that they are taking that would impair their judgement.
	Cross-contamination and contact with potentially contaminated materials	<ul style="list-style-type: none">• Stop immediately at any sign of obstruction.• Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination.• Only essential personnel will be in the work area.• Real-time air monitoring will take place before and during sampling activities.• All personnel will follow good hygiene practices.• Proper decontamination procedures will be followed.• All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.
	Cut hazards	<ul style="list-style-type: none">• Use care when handling glassware.• Wear adequate hand protection.
High-Pressure Water Jetting Operations	Heavy lifting	<ul style="list-style-type: none">• Use proper lifting techniques.• Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.
	Slip, trip, and fall hazards	<ul style="list-style-type: none">• Good housekeeping shall be implemented.• The work area shall be kept clean as feasible.• Inspect the work area for slip, trip, and fall hazards.

Table 5-1

**Activity Hazard Analysis
Former Antitank Range, Parcel 230Q-X, and Former Rifle Range, Parcel 149Q
Fort McClellan, Calhoun County, Alabama**

(Page 11 of 14)

Activity	Potential Hazards	Recommended Controls
High-Pressure Water Jetting Operations (continued)	Fueling	<ul style="list-style-type: none"> Only approved safety cans shall be used to store fuel. Do not refuel equipment while it is operating. Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.
	Faulty or damaged equipment	<ul style="list-style-type: none"> Equipment shall be inspected before being placed into service and at the beginning of each shift. Preventive maintenance procedures recommended by the manufacturer shall be followed. A lockout/tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.
	High-pressure water	<ul style="list-style-type: none"> Jetting gun operator must wear appropriate PPE including hard hat, impact-resistant safety glasses with side shields, water-resistant clothing, metatarsal guards for feet and legs, and hearing protection (if appropriate). One standby person shall be available within the vicinity of the pump during jetting operation. The work area shall be isolated and adequate barriers will be used to warn other site personnel.
	Unqualified operators	<ul style="list-style-type: none"> Only qualified and trained personnel are permitted to operate machinery and mechanized equipment associated with water jet cutting and cleaning.
	Out of control equipment	<ul style="list-style-type: none"> No machinery or equipment is permitted to run unattended. Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.
	Noise	<ul style="list-style-type: none"> Sound levels above 85 dBA mandates hearing protection by nearby site personnel.
	Activation during repairs	<ul style="list-style-type: none"> All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.
	Pinch points	<ul style="list-style-type: none"> Keep feet and hands clear of moving/suspended materials and equipment. Stay alert and clear of materials suspended .
	Falling objects	<ul style="list-style-type: none"> Hard hats are required by site personnel. Stay alert and clear of material suspended overhead.
	Flying debris	<ul style="list-style-type: none"> Impact-resistant safety glasses with side shields are required.

Table 5-1

**Activity Hazard Analysis
Former Antitank Range, Parcel 230Q-X, and Former Rifle Range, Parcel 149Q
Fort McClellan, Calhoun County, Alabama**

(Page 12 of 14)

Activity	Potential Hazards	Recommended Controls
High-Pressure Water Jetting Operations (continued)	Contact with potentially contaminated materials	<ul style="list-style-type: none"> All site personnel will wear the appropriate PPE.
Drilling and Installation of Monitoring Wells	Overhead hazards	<ul style="list-style-type: none"> Make sure no obstacles are within radius of boom. Always stay a safe distance from power lines.
	Faulty or damaged equipment being utilized to perform work	<ul style="list-style-type: none"> All machinery or mechanized equipment will be inspected by a competent mechanic and be certified to be in safe operating condition. Equipment will be inspected before being put to use and at the beginning of each shift. Faulty/unsafe equipment will be tagged and if possible locked out. Drill rigs shall be equipped with reverse signal alarm, backup warning lights, or the vehicle is backed up only when an observer signals it is safe to do so.
	Uneven terrain, poor ground support, inadequate clearances, contact with utilities	<ul style="list-style-type: none"> Inspections or determinations of road conditions and structures shall be made in advance to ensure that clearances and load capacities are safe for the passage or placing of any machinery or equipment. All mobile equipment and areas in which they are operated shall be adequately illuminated. Aboveground and belowground utilities will be located prior to staging equipment. Whenever the equipment is parked, the parking brake shall be set. Equipment parked on inclines will have the wheels chocked. Inspect brakes and tire pressure on drill rig before staging for work.
	Inexperienced operator	<ul style="list-style-type: none"> Machinery and mechanized equipment shall be operated only by designated personnel. Operators shall inform their supervisor(s) of any prescribed medication that they are taking that would impair their judgment.
	Jacks/outriggers	<ul style="list-style-type: none"> Ensure proper footing and cribbing.
	Falling objects	<ul style="list-style-type: none"> Remove unsecured tools and materials before raising or lowering the derrick. Stay alert and clear of materials suspended overhead.
	Pinch points	<ul style="list-style-type: none"> Keep feet and hands clear of moving/suspended materials and equipment. Stay alert at all times!

Table 5-1

**Activity Hazard Analysis
Former Antitank Range, Parcel 230Q-X, and Former Rifle Range, Parcel 149Q
Fort McClellan, Calhoun County, Alabama**

(Page 13 of 14)

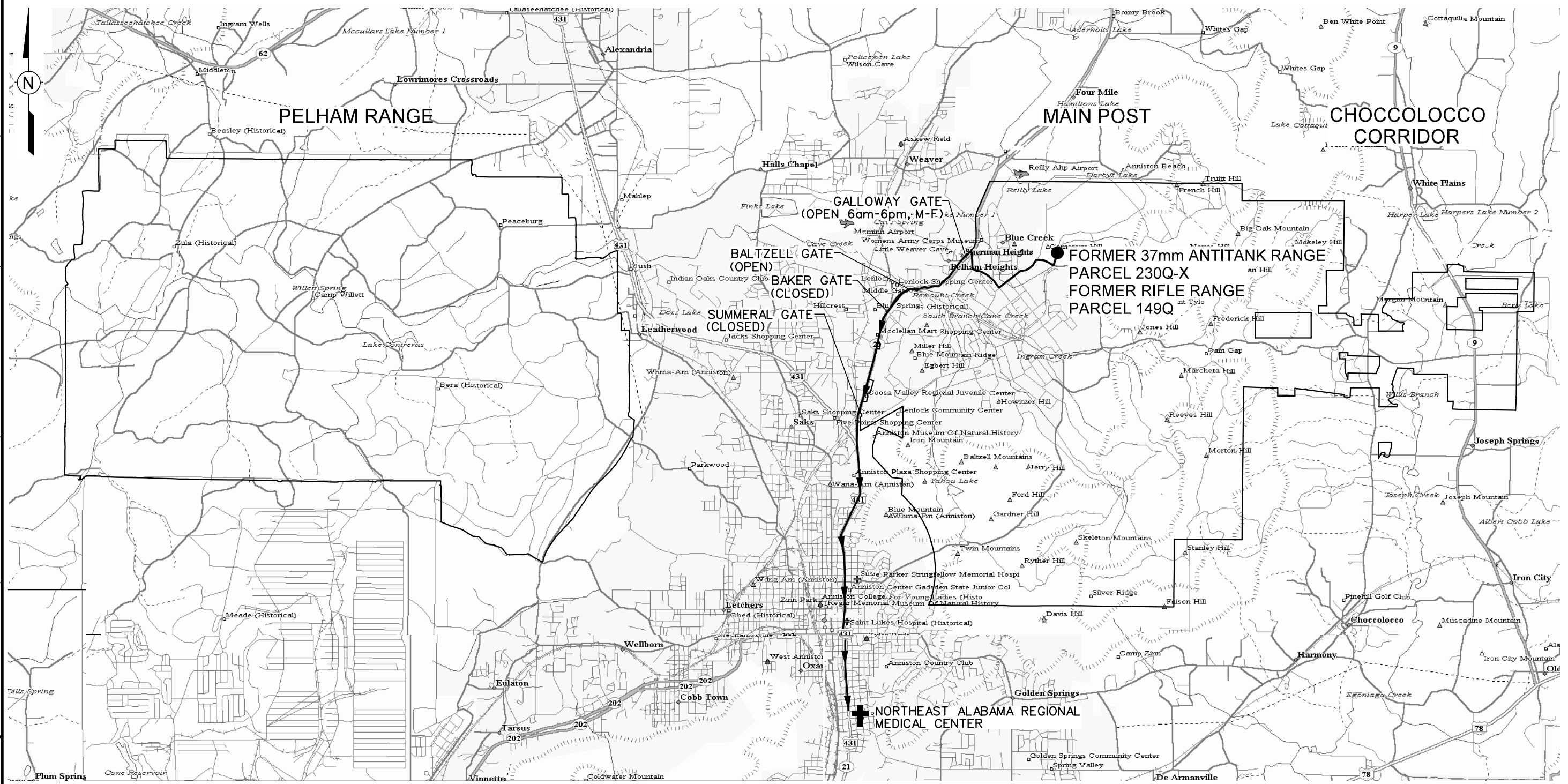
Activity	Potential Hazards	Recommended Controls
Drilling and Installation of Monitoring Wells (continued)	Fire	<ul style="list-style-type: none">• Mechanized equipment shall be shut down prior to and during fueling operations.• Have fire extinguishers inspected and readily available.
	Fall hazards	<ul style="list-style-type: none">• Personnel are not allowed to work off of machinery or use them as ladders.• Use fall protection when working above 6 feet.
	Contact with rotating or reciprocating machine parts	<ul style="list-style-type: none">• Use machine guards; use long-handled shovels to remove auger cuttings.• Safe lockout procedures for maintenance work.
	Heavy lifting	<ul style="list-style-type: none">• Use proper lifting techniques. Lifts greater than 60pounds require assistance or mechanical equipment; size up the lift.
	Slip, trip, and fall hazards	<ul style="list-style-type: none">• Practice good housekeeping, keep work area picked up and clean as feasible.• Continually inspect the work area for slip, trip, and fall hazards.
	Contact with potentially contaminated materials	<ul style="list-style-type: none">• Real-time air monitoring will take place. If necessary, proper personal protective clothing and equipment will be utilized.• Stop immediately at any sign of obstruction.• Do not breathe air surrounding the boring unless necessary.• Upgrade to respirator if necessary.• Avoid skin contact with soil cuttings. Wear gloves.• Stay clear of moving parts of drill rig.

Table 5-1

**Activity Hazard Analysis
Former Antitank Range, Parcel 230Q-X, and Former Rifle Range, Parcel 149Q
Fort McClellan, Calhoun County, Alabama**

(Page 14 of 14)

Activity	Potential Hazards	Recommended Controls
Drilling and Installation of Monitoring Wells (continued)	Drum handling	<ul style="list-style-type: none">• Be careful not to breathe air from around open drum any more than necessary. Monitor with photoionization detector/flame ionization detector (PID/FID) equipment and upgrade to respirator if necessary.• When filling a drum (with either soil or water), be careful not to make contact with the contained waste. Wear appropriate gloves. Make sure lid or bung of drum is secure.• If moving a drum unassisted, be sure to leverage properly, use proper lifting techniques, and wear safety glasses and steel-toed boots.• When using a drum dolly, make sure straps and lid catch are securely attached. Leverage properly when tilting drum. Be sure toes stay away from drum.
	UXO	<ul style="list-style-type: none">• UXO avoidance monitoring will be conducted by a UXO specialist prior to beginning activities.• UXO avoidance monitoring shall apply to all intrusive activities associated with well construction completion.• If UXO is encountered, cease all activities, mark the location, and notify the site manager and UXO specialist immediately.



LEGEND:

- ROUTE TO NORTHEAST ALABAMA REGIONAL MEDICAL CENTER
- U.S. HIGHWAY
- HOSPITALS
- INVESTIGATION SITE

DRIVING DIRECTIONS FROM BALTZELL GATE ROAD TO THE NORTHEAST ALABAMA MEDICAL CENTER

- LEAVING FORT MCCLELLAN ON BALTZELL GATE ROAD, TURN LEFT (SOUTH) ONTO AL HWY 21
- GO ~ 2.5 MILES WHERE AL HWY 21 MERGES WITH U.S. HWY 431 AND CONTINUE SOUTH
- CONTINUE SOUTH ON AL21/US431 FOR ~ 2.7 MILES
- TURN LEFT ONTO EAST 10th STREET
- GO ~ 0.2 MILE TO MEDICAL CENTER ON RIGHT
- NORTHEAST ALABAMA REGIONAL MEDICAL CENTER, 400 EAST 10th STREET
- PHONE NUMBER : (256) 235-5121

FIGURE 5-1
HOSPITAL EMERGENCY ROUTE

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018



ATTACHMENT 1

Evaluating OE/UXO/CWM Hazards in Support of HTRW Activities

Evaluating OE/UXO/CWM Hazards in Support of HTRW Activities

Date: March 4, 2002

Site Name: Former 37mm Antitank Range, Parcel 230Q-X, and

Former Rifle Range, Parcel 149Q

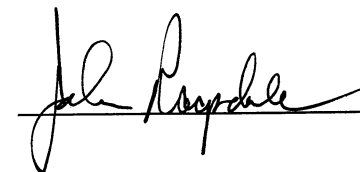
Job Number: 796887.01020300

Page 1 of 4

Name of person completing form: John Ragsdale

Title: Plan Writer

Signature:



1a. Have the historical records available for this HTRW site been reviewed?

Yes

No

☒☐

If the answer to 1a. is yes, proceed to 1b.

If the answer to 1a. is no, review site information prior to completing this form.

1b. Is there recent information (site walk, worker interviews, etc.) that indicates a potential OE/CWM hazard at this site?

Yes

No

☐☒

Proceed to 2.

2. According to the records review, is this site known or suspected to have been used for: Antitank training.

2a. Manufacturing, production, or shipping of conventional or chemical warfare materiel (CWM) OE:

Yes

No

☐☒

Live fire testing of any ordnance:

☒☐

Conventional or CWM OE training:

☒☐

Storage of conventional or CWM OE:

☐☒

Disposal or demilitarization of conventional or CWM OE:

☐☒

Other (specify): Please see pg. 4

2b. Manufacturing, production, or shipping of chemical agent:

Yes

No

☐☒

Research or testing of chemical agent:

☐☒

Chemical agent related training:

☒☐

Storage of chemical agent:

☐☒

Disposal or demilitarization of chemical agent:

☒☐

Other (specify): Please see pg. 4

Any 2a question answered "YES" indicates UXO support is required for all site activities. If all 2a questions are answered "NO", UXO support may not be required. Refer to Installation-Wide Safety and Health Plan (SHP) for additional information concerning UXO support. Proceed to question 2b.

Any 2b question answered "YES" requires the remainder of this form to be completed. If all 2b questions are answered "NO", real-time monitoring for chemical agent will not be required and completing the remainder of this form is not required. Refer to SHP for additional information concerning agent monitoring.

Additional space for notes and explanations on page 4.

Continue to page 2 of 4 –

Evaluating OE/UXO/CWM Hazards in Support of HTRW Activities

Page 2 of 4

Site Name: Former 37mm Antitank Range, Parcel 230Q-X, and Former Rifle Range, Parcel 149Q

Job Number: 796887.01020300

Date: March 04, 2002

3. For sites where the manufacturing, testing, storage, or disposal of CWM is suspected:

Yes No

Is there evidence that the CWM is/was containerized in potentially unexploded ordnance:

☐ ☒

Is there evidence that the CWM is/was containerized in nonexplosive containers:

☒ ☐

Is there evidence that the CWM is open to the environment (i.e., in an open container or free liquid/solid in the soil/water):

☐ ☒

Is there evidence that the CWM hazard has been removed from the site or that the site has been decontaminated:

☒ ☐

Has the site been previously monitored or sampled for chemical agent or agent breakdown products:

☒ ☐

For any "YES" above, was the agent or breakdown product identified?

☒ ☐

For any "Yes", list types of agent (mustard, lewisite, etc.) and the form (in ordnance, in drum, etc.) the CWM is expected to be found (or state "unknown"):

Unknown. A CWM EE/CA performed by the Corps of Engineers Huntsville Center was completed as of September 2001. All samples were clear of CWM and CWM by-products. See the attached letter.

List agent breakdown products identified: N/A

4. Defining the Potential for the Presence of CWM:

Agent Monitoring Requirements for Site Activities:

4a. High Presence Potential – Definition: CWM is known or highly suspected to be present at the site in a condition (within ordnance and/or nonexplosive container, or in an uncontainerized form in sufficient volume that weathering of the product has not rendered it harmless) that will cause potential harm to personnel if it is encountered.

Mandatory personal and perimeter air monitoring using the DAAMS, MINICAMS, and RTAP collection/analysis methods with off-site surety laboratory confirmation of all environmental samples. Specific monitoring criteria (equipment types and sampling station placement, percentage of personnel monitored, etc.) to be established in the Site Specific Safety and Health Plan (SSHP).

4b. Moderate Presence Potential - Definition: CWM is suspected to have been present at the site, but has been previously removed and/or decontaminated, or has been open to the environment such that it is expected to have degraded and been rendered harmless.

The need for personal and perimeter air monitoring using the DAAMS, MINICAMS, and RTAP collection/analysis methods with off-site surety laboratory confirmation of all environmental samples will be reviewed on a site-by-site basis. Specific monitoring criteria (equipment types and sampling station placement, percentage of personnel monitored, etc.) to be established in the Site Specific Safety and Health Plan (SSHP).

4c. Low Presence Potential – Definition: No indications that CWM will be present in quantity or reactivity (in munitions, projectiles, drums, etc.).

No specific personal or area monitoring for chemical agents required beyond what is specified in the SHP.

Continue to page 3 of 4 -

Evaluating OE/UXO/CWM Hazards in Support of HTRW Activities

Page 3 of 4

Site Name: Former 37MM Antitank Range

Job Number: 796887.01020300

Date: March 4, 2002

Based on the information available for this site, including information gathered during completion of this form, the potential for CWM to be present at this site, as defined above, is expected to be: **LOW**

Exceptions/Explanations: There has been no reported use of chemical munitions at this range. Parcel 185(7), though, overlaps and lies within the northern section of Parcel 230Q-X. CWM was known to be used at Parcel 185(7).

5. Based on the information provided in questions 1 through 5, above, the following guidelines will be used for establishing PPE requirements for activities to be performed at this site; Specific details are provided in the SSHP:

5a. High Exposure Potential - High exposure potential is determined by evaluating the potential presence of CWM in conjunction with the task(s) to be performed, as well as the specific location and duration of the task(s).

Subject to review by the IT CIH, PPE for all personnel in the exclusion zone at a site identified as having a "High Exposure Potential" will be Level B (supplied air) or Level C (full-face respirator with HEPA/Acid Gas/OV cartridges w/ emergency egress hood) and chemically resistant coveralls. Specific PPE requirements are in the SSHP for this site.

5b. Moderate Exposure Potential - Moderate exposure potential is determined by evaluating the potential presence of CWM in conjunction with the task(s) to be performed, as well as the specific location and duration of the task(s).

Subject to review by the IT CIH, PPE for all personnel in the exclusion zone at a site identified as having a "Moderate Exposure Potential" will be Modified Level D (disposable coveralls and emergency egress hood) carried by all personnel. Specific PPE requirements are in the SSHP for this site.

5c. Low Exposure Potential - Low exposure potential is determined by evaluating the potential presence of CWM in conjunction with the task(s) to be performed, as well as the specific location and duration of the task(s).

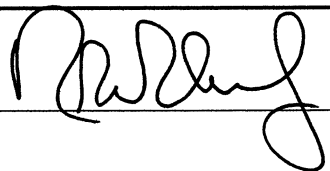
Subject to review by the IT CIH, no additional PPE requirements above those stated in the SSHP are needed for sites identified as having "Low Exposure Potential." Specific PPE requirements are in the SSHP for this site.

Based on all available information, the exposure potential at this site is considered to be: **LOW**

Exceptions/Explanations: Please see page 4.

Review Signatures:

IT Senior UXO Specialist



Date: 31 Mar 02

IT H&S Specialist



Date: 4/8/02

Site Name: Former 37mm Antitank Range

Job Number: 796887.01020300

Date: March 4, 2002

Additional Notes and Explanations: The northern section of Parcel 230Q-X was later used as a chemical training area, Training Area T-31, Parcel 185(7). The Corps of Engineers Huntsville Center has completed its CWM EE/CA and has authorized intrusive activities. The approval letter authorizing the investigation activities required at Parcel 230Q-X is attached.



DEPARTMENT OF THE ARMY
MOBILE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 2288
MOBILE, ALABAMA 36628-0001

REPLY TO
ATTENTION OF:

September 7, 2001

Environmental and HTRW Section
Engineering Division

IT Corporation
Attention: Mr. Steve Moran
312 Directors Drive
Knoxville, Tennessee 37923-4799

Dear Mr. Moran:

Reference is made to your Contract DACA21-96-D-0018, Task Order CK10, WADs 1, 2, 9, and 10, at Fort McClellan, Alabama.

The Corps of Engineers Huntsville Center has completed its CWM EE/CA and has received all soil sample results. All of the samples were clear of Chemical Warfare Material and Chemical Warfare Material by-products. A copy of Huntsville's letter is enclosed for your files.

You are now authorized to begin the monitoring well installations within these areas as approved in your work plans.

Should you have any questions, please contact me at (334) 690-3077.

Sincerely,

A handwritten signature in cursive script that reads "Ellis C. Pope".

Encl

Ellis C. Pope
Authorized Representative of the
Contracting Officer

Cf: Mr. Ron Levy
BRAC Environmental Coordinator
U.S. Army Garrison/Transition Force
Environmental Office
291 Jimmy Parks Boulevard
Fort McClellan, AL 36205-5000



DEPARTMENT OF THE ARMY
HUNTSVILLE CENTER, CORPS OF ENGINEERS
P.O. BOX 1600
HUNTSVILLE, ALABAMA 35807-4301

REPLY TO
ATTENTION OF

CEHNC-OE-DC (200-1c)

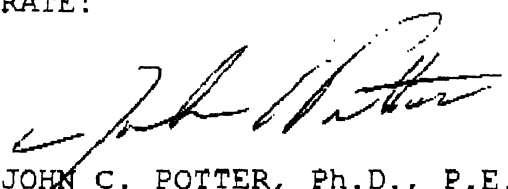
5 September 2001

MEMORANDUM FOR Commander, U.S. Army Engineer District, Mobile,
ATTN: Ellis Pope (EN-GE), P.O. Box 2288, Mobile, AL 36628-0001

SUBJECT: Chemical Warfare Material (CWM) Engineering
Evaluation/Cost Analysis (EE/CA) Completion and Release of
Property for Hazardous, Toxic, and Radioactive Waste (HTRW)
Investigations, Fort McClellan, AL

1. The CWM EE/CA for Fort McClellan has been completed and the results from all the soil samples have been received. All of the samples were clear of Chemical Warfare Material and Chemical Warfare Material by-products.
2. The HTRW investigations can be started on the Chemical Warfare Material Sites that were completed during this investigation using anomaly avoidance and withdrawal if suspect chemical weapons are found.
3. If you have any questions, please call Mr. Dan Copeland at 256-895-1567.

FOR THE DIRECTOR OF
ORDNANCE AND EXPLOSIVES DIRECTORATE:


JOHN C. POTTER, Ph.D., P.E.
Chief, Design Center
for Ordnance and Explosives
Directorate